

Decelerating Consequences - Reinforcement-Based Procedures

Differential Reinforcement of Other Behavior (DRO)

I. Definition

The differential reinforcement for engaging in any response *other* than the target behavior for a specified interval of time. As other responses become more frequent over successive DRO intervals, they compete with and eventually replace undesirable behavior. DRO serves to increase the number of intervals without the target behavior and in so doing, decrease the frequency of the behavior.

II. Critical Elements of DRO

A. Interval Size

1. Establish the current rate of the target behavior (baseline).
2. Determine the interval size. Calculate the interresponse time (IRT) and divide by two.
3. Example: Mary swears in class "a lot." Baseline data shows that she swears roughly three times in an hour, or an average of once every twenty minutes. $20/2 = 10$, or an interval size of ten minutes.

B. Interval Type

1. Fixed Interval: Pre-set intervals of a specific size. If the target behavior occurs during the fixed interval, no reinforcement is provided until the next interval is completed without the target behavior. Example: Class starts at 8:00 a.m. Mary swears in class at 8:02. She does not receive any reinforcement at 8:10, but, if she does not swear during the *next* 10 minutes, she *will* receive reinforcement at 8:20.
2. Reset Interval: Pre-set intervals of a specific size. The occurrence of the target behavior causes the interval to be started again, immediately. The individual will still need to complete a specific interval without the target behavior before reinforcement is provided. Example: Class starts at 8:00 a.m. Mary swears in class at 8:02 and at 8:15. She receives reinforcement at 8:12. She is eligible for reinforcement at 8:25 if she does not swear again before then.

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C. Size of Reinforcer

1. Reinforcement depends upon a certain amount of deprivation to avoid satiation. To avoid satiation:
 - a. Set a limit on the amount of reinforcement a person is able to receive.
 - b. Assume that a person will receive the upper limit.
2. Identifying how much reinforcement depends upon how much the individual would use or consume if given free access. Thus the free access rule:

As a general rule of thumb, 80% of the free access amount is the most the individual can earn assuming maximum performance.

An important concept in the free access rule is that we really do not need to know what a person likes or dislikes, we need only to know what he/she does and how much he/she does it. By controlling the event or item and by using less of it than would be used or consumed given free access, it can serve as a reinforcer. As long as a person does something or consumes something with a predictable rate, it can serve as a reinforcer.

E. Variation - DRO with a DROP or Progressive Schedule

In a DROP schedule, the individual is reinforced for successive intervals of not exhibiting the target behavior. The amount of reinforcer is increased by one for each successive interval of success up to a pre-determined amount.

Example: Mary receives a dime for ten minutes without swearing. If she goes for 20 minutes without swearing she gets 20 cents, 30 minutes - 30 cents, 40 minutes 40 cents and for 50 minutes - 50 cents. For every ten minute longer period that Mary does not swear, she gets 50 cents.

III. Advantages/Disadvantages

A. Pros

1. Lack of behavioral contrast.
2. No known side effects.
3. Good generalization.
4. Potentially rapid effects.
5. Social validity.

B. Cons

1. Non-constructive

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2. Possibility of inadvertent reinforcement.

When an individual satisfies the criteria for reinforcement but another inappropriate behavior occurs, it might be possible to group the behaviors into the same class of behaviors, especially if the behavior serves the same function.

Example: Mary does not swear for ten minutes, but she does slam her book on the desk. Both serve to allow her to release frustration at peers and staff. Mary may feel she is being reinforced for slamming her book on the desk instead of swearing.

3. Reinforcement may serve as a discriminative stimulus for the target behavior.

When reinforcement for non-occurrence of a targeted behavior serves as a discriminative stimulus for exhibiting the targeted behavior, a limited hold (a few seconds, minute) on the delivery of the reinforcer might be indicated. The limited hold should only be as long as needed to assist the student in discriminating appropriate behavior and should never be an additional requirement.

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Differential Reinforcement of Lower Rates of Responding (DRL)

I. Definition

Reinforcement after a specified period of time during which a targeted response occurs less than some specified number of times.

II. Critical Elements of DRL

A. Free Access Rule (see DRO)

B. Interval Size

1. Take a baseline count of the number of occurrences of the targeted behavior per time period. Naturally occurring time intervals (like class periods) may be used.
2. The student is reinforced if the frequency of the target behavior is *below* that of the baseline for that period.
3. The interval size may not be as critical as the criteria for reinforcement, but the frequency of reinforcement may need to be considered, e.g. reinforcement at the end of each class period for a behavior that occurs 5 times an hour is more effective than reinforcement at the end of each day.

C. Changing Criteria

The criterion for reinforcement should be lowered only after a new steady state for the behavior has been reached and maintained for a predetermined amount of time.

Example: Mary swears an average of 15 times per class period. She is reinforced for each class period during which she swears 14 times or less. If she swears 14 times or less for five days in a row, the criteria for reinforcement is changed to 13 times or less.

D. Tangible Monitoring Systems

1. A self monitoring system is not an aversive procedure. If the individual resists moving the monitoring tokens, do not force the issue.
2. The individual is in control of the system. He/She may need assistance initially to use the system,

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however, system tokens are not given away. This is not response cost.

3. Using the system is done matter-of-factly.
4. System tokens are not exchangeable. This is an all or nothing proposition. individual system tokens do not have value.

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III. Advantages/Disadvantages

A. Pros

1. High rate reduction.
2. Flexible intervals can be determined by naturally occurring events in the day.
3. Tangible feedback.

B. Cons

1. Has the potential for aversiveness
2. Non-constructive
3. Social Validity
Delivery of reinforcement while behavior is still occurring.
4. Reduction, not elimination.

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Differential Reinforcement of Alternative, Incompatible Behaviors (ALT-R, DRA, DRI)

I. Definition

The differential reinforcement of behaviors that are topographically different from the target behavior.

II. Critical Elements of DRL

- A. Similarity or dissimilarity of the alternative Response(s)
The alternative behavior selected must be such that it is not performed in a similar fashion, that it does not look like, sound like, or approximate the target behavior.
- B. Compatibility or incompatibility of the alternative response(s)
Alternatives selected must be such that they cannot be done at the same time as the target response.
- C. Satisfying the 100% rule
Together, the target behavior and the alternative response must represent 100% of the universe of possibilities. A combination of alternative responses may be used as long as they are topographically dissimilar and incompatible, and also combine to represent, with the target behavior, 100% of the universe of possibilities. Thus, as the alternative behavior increases, the target behavior naturally decreases. (See page 101, chapter 8, of *Progress without Punishment* by Donnellan, LaVigna, et. al.)
- D. Presence of alternative responses in the student repertoire
Since the focus of this alternative strategy is to reduce the incidence of the target behavior by increasing an alternative behavior, the alternative behavior must occur at some point, in order for it to be reinforced.
- E. Reversing the functional roles of the target responses and the alternative response

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III. Advantages/Disadvantages

A. Pros

1. Has the potential for long lasting results.
2. Constructive approach.
3. Socially validated.

B. Cons

1. Delayed effect.
2. Mixed evidence.
3. Complexity in operation:
Selection of an alternative response that satisfies *all* the critical elements is deceptively difficult.
4. Recovery and rebound:
If the alternative response stops being reinforced, the target behavior is likely to return and possibly at a higher rate.

* Note: For more information regarding DRO, DRL and DRA procedures, we recommend you consult the following:

Donnellan, A., LaVigna, G., Negri-Shoultz, N., and Fassbender, L. (1988). Progress without punishment: Effective approaches for learners with behavior problems, New York: Teachers College Press. Specifically **Chapter 6: Differential reinforcement of other behavior**, **Chapter 7: Differential reinforcement of low rates of responding**, and **Chapter 8: Differential reinforcement of alternative behaviors**.